```
=> fil reg

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DICTIONARY FILE UPDATES:   8 NOV 2000  HIGHEST RN 301804-97-7

TSCA INFORMATION NOW CURRENT THROUGH July 8, 2000

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

Structure search limits have been increased.  See HELP SLIMIT
for details.

=> d que l17

L17           1 SEA FILE=REGISTRY ABB=ON  113756-18-6


=> d l17


L17  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2000 ACS
RN   113756-18-6  REGISTRY
CN   Reductase, guanosine diphosphate-4-keto-6-deoxy-D-mannose 3,5-epimerase
4-
     (9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   GDP-4-keto-6-D-deoxymannose epimerase-reductase
CN   GDP-4-keto-6-deoxy-D-mannose epimerase-reductase
CN   GDP-4-keto-6-deoxymannose 3,5-epimerase 4-reductase
CN   GDP-4-keto-6-deoxymannose epimerase-reductase
CN   GDP-fucose synthetase
CN   Guanosine diphosphofucose synthetase
MF   Unspecified
CI   MAN
SR   CA
LC   STN Files:   BIOSIS, CA, CAPLUS, TOXLIT, USPATFULL

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
               22 REFERENCES IN FILE CA (1967 TO DATE)
                2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
               22 REFERENCES IN FILE CAPLUS (1967 TO DATE)


=> fil hcaplus

FILE 'HCAPLUS' ENTERED AT 14:47:04 ON 09 NOV 2000
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```

FILE COVERS 1967 - 9 Nov 2000 VOL 133 ISS 20
FILE LAST UPDATED: 8 Nov 2000 (20001108/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

This file supports REGlstRY for direct browsing and searching of all substance data from the REGISTRY file. Enter HELP FIRST for more information.

Now you can extend your author, patent assignee, patent information, and title searches back to 1907. The records from 1907-1966 now have this searchable data in CAOLD. You now have electronic access to all of CA: 1907 to 1966 in CAOLD and 1967 to the present in HCAPLUS on STN.
'OBI' IS DEFAULT SEARCH FIELD FOR 'HCAPLUS' FILE

=> d que l19;d his l20

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L1            1 SEA FILE=REGISTRY ABB=ON  15839-70-0
L8          223 SEA FILE=HCAPLUS ABB=ON  L1
L17           1 SEA FILE=REGISTRY ABB=ON  113756-18-6
L18          22 SEA FILE=HCAPLUS ABB=ON  L17
L19          12 SEA FILE=HCAPLUS ABB=ON  L18 AND L8
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```
     (FILE 'HCAPLUS' ENTERED AT 14:46:02 ON 09 NOV 2000)
L20           0 S L19 NOT (L9 OR L10 OR L16)

     FILE 'REGISTRY' ENTERED AT 14:46:46 ON 09 NOV 2000

     FILE 'HCAPLUS' ENTERED AT 14:47:04 ON 09 NOV 2000
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```
=> fil wpids

FILE 'WPIDS' ENTERED AT 14:57:59 ON 09 NOV 2000
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FILE LAST UPDATED: 06 NOV 2000              <20001106/UP>
>>>UPDATE WEEKS:
MOST RECENT DERWENT WEEK            200056   <200056/DW>
DERWENT WEEK FOR CHEMICAL CODING:   200056
DERWENT WEEK FOR POLYMER INDEXING:  200056
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

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    WPIDS, INCLUDING THE DERWENT CHEMISTRY RESOURCE (DCR),
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    SEE http://www.derwent.com/covcodes.html  <<<

=> d his


     (FILE 'WPIDS' ENTERED AT 14:48:15 ON 09 NOV 2000)
                DEL HIS Y
L1           25 S GUANOSINE (2W)  DIPH?(2W) FUCOSE OR GDP (3W) FUCOSE OR
GUANOS
L2            0 S GKDM
L3           12 S DEOXYMANNOSE OR DEOXY(2W) MANNOSE OR DE OXY (2W) MANNOSE
L4            2 S L3 AND GUANOSINE
L5            0 S GUANOSINE (7A) RHAMNOPYRAN?
L6            0 S GUANOSINE (10A) (HEXOPYRANOS?  OR HEXO PYRANOS?)
L7            1 S L4 AND L1
L8           24 S L1 NOT L7

     FILE 'WPIDS' ENTERED AT 14:57:59 ON 09 NOV 2000

=> d .wp l7;d .wp l8 1-24


L7   ANSWER 1 OF 1  WPIDS COPYRIGHT 2000   DERWENT INFORMATION LTD
AN   1999-527202 [44]   WPIDS
DNC  C1999-154804
TI   New vector expressing an enzyme that converts guanosine
     diphosphate-4-keto-6-deoxymannose to GDP-
     fucose, used to prepare fucosylated oligosaccharides.
DC   B04 C03 D16
IN   SJOBERG, E R
PA   (CYTE-N) CYTEL CORP
CYC  85
PI   WO 9936555    A1 19990722 (199944)* EN   78p
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
            OA PT SD SE SZ UG ZW
         W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD
```

GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV
MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT
UA UG US UZ VN YU ZW
AU 9923217 A 19990802 (199954)
EP 1045916 A1 20001025 (200055) EN
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
ADT WO 9936555 A1 WO 1999-US893 19990115; AU 9923217 A AU 1999-23217 19990115;
EP 1045916 A1 EP 1999-903116 19990115, WO 1999-US893 19990115
FDT AU 9923217 A Based on WO 9936555; EP 1045916 A1 Based on WO 9936555
PRAI US 1999-71076 19990114; US 1998-71076 19980115
AB WO 9936555 A UPAB: 19991026
NOVELTY - Expression vector comprises a promoter linked to a nucleic acid (I) that encodes a prokaryotic enzyme (II) having both epimerase and reductase activity, for catalysis of conversion of GDP (**guanosine** diphosphate)-4-keto-6-**deoxymannose** (III) to **GDP-fucose** (IV). The vector lacks an Escherichia coli wcaI coding region.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) cells containing the vector;

(2) reaction mixture for synthesis of (IV) comprising (III), reduced nicotinamide-adenosine dinucleotide phosphate (NADPH) and (II);

(3) enzymatic conversion of GDP-mannose (V) to (IV); and

(4) method for preparing fucosylated oligosaccharides (VI).

ACTIVITY - None given.

MECHANISM OF ACTION - None given.

USE - (II) is used for production of (IV) which is then used to prepare fucosylated oligosaccharides (A) by enzymatic fucosyl transfer, e.g. to modify oligosaccharide components of glycoproteins or glycolipids, such as insulin, human or bovine growth hormones, tissue plasminogen activator, interleukins, viral antigens etc., or chimeric products such as immunoglobulin derivatives. (A) are variously useful as therapeutic and diagnostic agents and in foods.

ADVANTAGE - Combining two activities in a single enzyme simplifies the process, allowing efficient synthesis of complex fucosylated oligosaccharides in a single reaction vessel from readily available starting materials. The method is suitable for large scale synthesis, e.g. 0.2 kg batches. (II) can be expressed efficiently in prokaryotic cells (contrast similar mammalian enzymes).

Dwg.0/16

L8 ANSWER 1 OF 24 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD
AN 2000-387813 [33] WPIDS
DNC C2000-117817
TI Mixture for producing product saccharides such as polysaccharides and oligosaccharides, comprises cells containing genes encoding glycosyltransferases.
DC B04 C06 D16 D17
IN DEFREES, S; JOHNSON, K
PA (NEOS-N) NEOSE TECHNOLOGIES INC

CYC 90
PI WO 2000029603 A2 20000525 (200033)* EN 101p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2000018261 A 20000605 (200042)
ADT WO 2000029603 A2 WO 1999-US27599 19991118; AU 2000018261 A AU 2000-18261 19991118
FDT AU 2000018261 A Based on WO 200029603
PRAI US 1998-109096 19981119; US 1998-109031 19981118
AB WO 200029603 A UPAB: 20000712
NOVELTY - A reaction mixture for producing a product saccharide comprising
an acceptor saccharide (I) and cell which produces a nucleotide sugar (II) and a glycosyltransferase that catalyzes the transfer of a sugar from
(I) to (II), is new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
(1) a cell (C1) that produces a saccharide comprising:
(a) a gene encoding a glycosyltransferase;
(b) an enzymatic system for forming a nucleotide sugar that is a substrate for the glycosyltransferase; and
(c) an exogenous saccharide acceptor group;
(2) a cell (C2) that produces a sulfated polysaccharide comprising a heterologous gene that encodes a sulfotransferase and an enzymatic system that produces PAPS (not defined);
(3) a method (M1) of producing a product saccharide comprising contacting C1 with an acceptor saccharide;
(4) a method (M2) for synthesizing a polysaccharide backbone for heparin, heparan sulfate and related compounds comprising contacting (I) consisting of a terminal glucuronic acid or GlcNAc residue with a reaction
mixture comprising a microorganism of plant cell consisting of:
(a) an enzymatic system for forming UDP-GlcNAc; and
(b) a recombinant GlcNAc transferase that catalyzes the transfer of GlcNAc from the UDP-GlcNAc to a terminal glucuronic acid on (I) to produce
(I) which comprises a terminal GlcNAc residue; and
(5) a method (M3) for synthesizing heparin, heparan sulfate and related compounds comprising contacting a heparan polysaccharide backbone with a reaction mixture comprising:
(a) an enzymatic system for forming PAPS; and
(b) a recombinant sulfotransferase which catalyzes the transfer of a sulfate from the PAPS to the polysaccharide backbone to produce an N-sulfated polysaccharide.
USE - The methods are useful for the enzymatic synthesis of saccharides such as polysaccharides, oligosaccharides, glycoproteins and glycolipids.
ADVANTAGE - The methods allow the synthesis of complex product saccharides in a single vessel using readily available, relatively inexpensive starting materials.
Dwg.0/15

L8 ANSWER 2 OF 24 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD
AN 2000-365628 [31] WPIDS
DNN N2000-273565 DNC C2000-110490
TI Helicobacter pylori alpha1,2-fucosyltransferase enzymes useful for producing a fucosylated oligosaccharide and for diagnosing malignancies related to H. pylori infections.
DC B04 D16 S03
IN PALCIC, M; TAYLOR, D E; WANG, G
PA (UYAL-N) UNIV ALBERTA
CYC 90
PI WO 2000026383 A1 20000511 (200031)* EN 68p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2000010225 A 20000522 (200040)
ADT WO 2000026383 A1 WO 1999-CA1031 19991103; AU 2000010225 A AU 2000-10225 19991103
FDT AU 2000010225 A Based on WO 200026383
PRAI US 1999-433598 19991102; US 1998-107268 19981104
AB WO 200026383 A UPAB: 20000630
NOVELTY - A substantially purified Helicobacter pylori alpha 1,2-fucosyltransferase (I), is new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:
(1) an isolated nucleic acid molecule (II) encoding (I);
(2) a vector (III) comprising (II);
(3) a host cell (IV) comprising (III);
(4) an antibody (V) that binds specifically to (I);
(5) a method (VI) for detecting alpha 1,2-fucosyltransferase polypeptides in a sample, comprising:
(a) contacting the sample with (V); and
(b) detecting binding of the antibody to an alpha 1,2-fucosyltransferase polypeptide (binding is indicative of the presence of alpha 1,2-fucosyltransferase polypeptides in the sample);
(6) a method (VII) for detecting alpha 1,2-fucosyltransferase polynucleotides in a sample, comprising:
(a) contacting a sample suspected of containing alpha 1,2-fucosyltransferase polynucleotide with a probe that hybridizes to alpha 1,2-fucosyltransferase polynucleotides; and
(b) detecting hybridization of the probe with an alpha 1,2-fucosyltransferase polynucleotide (detection of hybridization is indicative of alpha 1,2-fucosyltransferase polynucleotides in the sample);
(7) a recombinant method (VIII) for producing alpha 1,2-fucosyltransferase polypeptides, comprising inserting (II) adjacent to a selectable marker so that the polynucleotide produced encodes a recombinant alpha 1,2-fucosyltransferase polypeptide fused to the selectable marker;
(8) the polynucleotide (IX) produced in (VIII);
(9) a host cell (X) containing (IX);
(10) an expression system (XI) for producing alpha 1,2-fucosyltransferase comprising a host cell modified with a polynucleotide encoding alpha 1,2-fucosyltransferase or an enzymatically

active fragment; and
(11) a method (XII) for producing a fucosylated oligosaccharide, comprising contacting a alpha 1,2-fucosyltransferase polypeptide with an alpha 1,2-fucosyltransferase substrate under conditions suitable for production of the oligosaccharide.
ACTIVITY - None given.
MECHANISM OF ACTION - (I) catalyzes the synthesis of Lewis Y (claimed), and other fucosylated oligosaccharides such as Lewis X, Lewis B and H type 1.
A peptide expressed from the plasmid pGEMI6 carrying the fucT2 gene from Helicobacter pylori UA802 was found to have a specific activity of 309 plus or minus 28 mu U/mg for the formation of H type 1 from Type 1 receptors and 301 plus or minus 28 mu U/mg for the formation of Lewis B from Lewis A (a microunit (mu U) of the enzyme is expressed as the amount of enzyme required to convert 1 pmol of acceptor to a product per minute).
USE - The alpha 1,2-fucosyltransferase enzymes are useful for producing a fucosylated oligosaccharides such as Lewis X, Lewis Y, Lewis B and H type 1, which are structurally similar to certain tumor associated carbohydrate antigens found in mammals. These product glycoconjugates have research and diagnostic utility for the development of assays and reagents (e.g. antibodies) for detecting Helicobacter pylori and associated mammalian tumors.
Dwg.0/8

L8 ANSWER 3 OF 24 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD
AN 2000-271058 [23] WPIDS
DNC C2000-082648
TI New method for the enzymatic synthesis of an -a-2,3-sialylated fucosylated oligosaccharide, a cell-mediated antigen immune response suppressant.
DC B03 B04 D16
IN PALCIC, M M; SUJINO, K
PA (SYNS-N) SYNSORB BIOTECH INC
CYC 87
PI WO 2000014264 A1 20000316 (200023)* EN 42p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW
AU 9954998 A 20000327 (200032)
ADT WO 2000014264 A1 WO 1999-CA801 19990902; AU 9954998 A AU 1999-54998 19990902
FDT AU 9954998 A Based on WO 200014264
PRAI US 1998-146285 19980903
AB WO 200014264 A UPAB: 20000516
NOVELTY - A method for the enzymatic synthesis of an alpha -2,3-sialylated fucosylated oligosaccharide containing a sialic acid or its analog is new.

```
=> d his

     (FILE 'REGISTRY' ENTERED AT 14:34:26 ON 09 NOV 2000)
                DEL HIS Y
L1              1 S 15839-70-0
L2              1 S 18186-48-6

     FILE 'HCAPLUS' ENTERED AT 14:35:47 ON 09 NOV 2000
L3             43 S  L1/P OR L1 (L) (PREPN OR PREPAR? OR MANUF? OR MFG#)
L4             29 S L1 (L) (PREP)/RL
L5             43 S L3 OR L4
L6             10 S L2
L7              1 S L6 AND L5
L8            223 S L1
L9              7 S L8 AND L6
L10             3 S L6 NOT L9
L11            29 S EPIMERASE (L) REDUCTASE#
L12             7 S L11 AND L8
L13          6315 S  CORYNEBACTER?
L14             3 S L8 AND L13
L15             9 S L12 OR L14
L16             7 S L15 NOT (L9 OR L10)

     FILE 'REGISTRY' ENTERED AT 14:43:45 ON 09 NOV 2000

     FILE 'HCAPLUS' ENTERED AT 14:43:58 ON 09 NOV 2000

     FILE 'REGISTRY' ENTERED AT 14:45:49 ON 09 NOV 2000
L17             1 S 113756-18-6

     FILE 'HCAPLUS' ENTERED AT 14:46:02 ON 09 NOV 2000
L18            22 S  L17
L19            12 S L18 AND L8
L20             0 S L19 NOT (L9 OR L10 OR L16)

     FILE 'REGISTRY' ENTERED AT 14:46:46 ON 09 NOV 2000

     FILE 'HCAPLUS' ENTERED AT 14:47:04 ON 09 NOV 2000
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=> fil reg

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DICTIONARY FILE UPDATES:   8 NOV 2000  HIGHEST RN 301804-97-7

TSCA INFORMATION NOW CURRENT THROUGH July 8, 2000

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  conducting SmartSELECT searches.

Structure search limits have been increased.  See HELP SLIMIT
for details.

=> d que l1;d l1

L1            1 SEA FILE=REGISTRY ABB=ON  15839-70-0



L1   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2000 ACS
RN   15839-70-0  REGISTRY
CN   Guanosine 5'-(trihydrogen diphosphate), P'-(6-deoxy-.beta.-L-
     galactopyranosyl) ester (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   Guanosine 5'-(trihydrogen pyrophosphate), mono(6-deoxy-.beta.-L-
     galactopyranosyl) ester (8CI)
CN   Guanosine 5'-pyrophosphate, .beta.-L-fucopyranosyl ester (6CI)
OTHER NAMES:
CN   Fucopyranose, 1.fwdarw.5'-ester with guanosine 5'-(trihydrogen
     pyrophosphate)
CN   GDP-.beta.-L-Fucose
CN   GDP-fucose
CN   GDP-L-fucose
CN   Guanosine 5'-(trihydrogen pyrophosphate),
mono(6-deoxy-L-galactopyranosyl)
     ester
CN   Guanosine 5'-(trihydrogen pyrophosphate), mono(6-deoxygalactopyranosyl)
     ester
CN   Guanosine 5'-(trihydrogen pyrophosphate), mono-L-fucosyl ester
CN   Guanosine 5'-diphosphate L-fucose
CN   Guanosine 5'-pyrophosphate, L-fucosyl ester
CN   Guanosine diphosphate fucose
CN   Guanosine diphosphofucose
CN   Guanosine pyrophosphate, L-fucosyl ester
FS   STEREOSEARCH
DR   90191-74-5, 27461-48-9, 29657-30-5, 31701-20-9, 176020-50-1
MF   C16 H25 N5 O15 P2
CI   COM
LC   STN Files:   AGRICOLA, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA,
       CANCERLIT, CAOLD, CAPLUS, CASREACT, CHEMCATS, CSCHEM, EMBASE, MEDLINE,
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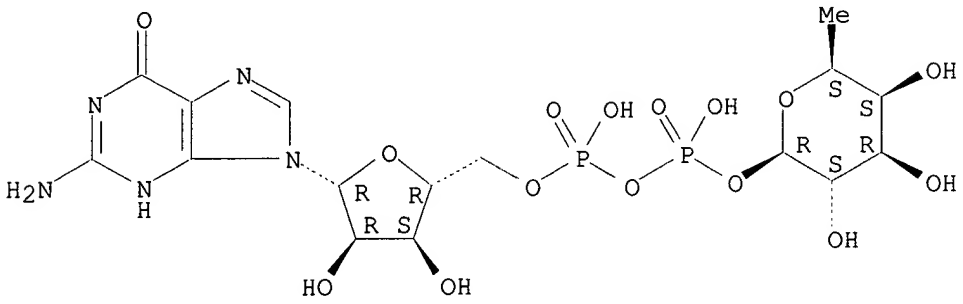
TOXLINE, TOXLIT, USPATFULL
(*File contains numerically searchable property data)

Absolute stereochemistry.



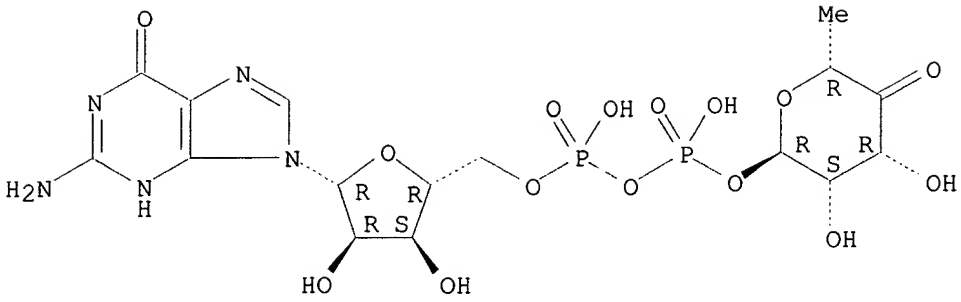
214 REFERENCES IN FILE CA (1967 TO DATE)
3 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
215 REFERENCES IN FILE CAPLUS (1967 TO DATE)
5 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> d que l2;d l2

L2 1 SEA FILE=REGISTRY ABB=ON 18186-48-6

L2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2000 ACS
RN **18186-48-6** REGISTRY
CN Guanosine 5'-(trihydrogen diphosphate), P'-(6-deoxy-.alpha.-D-lyxo-hexopyranos-4-ulos-1-yl) ester (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Guanosine 5'-(trihydrogen pyrophosphate), mono(6-deoxy-.alpha.-D-lyxo-hexopyranos-4-ulosyl) ester (8CI)
CN Guanosine 5'-pyrophosphate, ester with 4-keto-.alpha.-D-rhamnopyranose (6CI)
OTHER NAMES:
CN GDP-4-keto-6-deoxy-D-mannose
CN Guanosine 5'-diphosphate 4-keto-6-deoxy-D-mannose
FS STEREOSEARCH
MF C16 H23 N5 O15 P2
LC STN Files: CA, CAOLD, CAPLUS, MEDLINE, TOXLIT

Absolute stereochemistry.



10 REFERENCES IN FILE CA (1967 TO DATE)
10 REFERENCES IN FILE CAPLUS (1967 TO DATE)
1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> fil hcaplus

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FILE COVERS 1967 - 9 Nov 2000 VOL 133 ISS 20
FILE LAST UPDATED: 8 Nov 2000 (20001108/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

This file supports REGlstRY for direct browsing and searching of all substance data from the REGISTRY file. Enter HELP FIRST for more information.

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'OBI' IS DEFAULT SEARCH FIELD FOR 'HCAPLUS' FILE

=> d his l3-

(FILE 'HCAPLUS' ENTERED AT 14:35:47 ON 09 NOV 2000)
L3 43 S L1/P OR L1 (L) (PREPN OR PREPAR? OR MANUF? OR MFG#)
L4 29 S L1 (L) (PREP)/RL
L5 43 S L3 OR L4
L6 10 S L2
L7 1 S L6 AND L5

```
L8          223 S L1
L9            7 S L8 AND L6
L10           3 S L6 NOT L9
L11          29 S EPIMERASE (L) REDUCTASE#
L12           7 S L11 AND L8
L13        6315 S  CORYNEBACTER?
L14           3 S L8 AND L13
L15           9 S L12 OR L14
L16           7 S L15 NOT (L9 OR L10)

     FILE 'REGISTRY' ENTERED AT 14:43:45 ON 09 NOV 2000

     FILE 'HCAPLUS' ENTERED AT 14:43:58 ON 09 NOV 2000

=> d .ca l9 1-7; d.ca l10 1-3;d .ca l16 1-7


L9   ANSWER 1 OF 7  HCAPLUS  COPYRIGHT 2000 ACS
ACCESSION NUMBER:        1999:622706  HCAPLUS
DOCUMENT NUMBER:         131:333982
TITLE:                   Stereochemical course and steady state mechanism of
                         the reaction catalyzed by the GDP-fucose synthetase
                         from Escherichia coli
AUTHOR(S):               Menon, Saurabh; Stahl, Mark; Kumar, Ravindra; Xu,
                         Guang-Yi; Sullivan, Francis
CORPORATE SOURCE:        Wyeth Research, Cambridge, MA, 02140, USA
SOURCE:                  J. Biol. Chem. (1999), 274(38), 26743-26750
                         CODEN: JBCHA3; ISSN: 0021-9258
PUBLISHER:               American Society for Biochemistry and Molecular
                         Biology
DOCUMENT TYPE:           Journal
LANGUAGE:                English
AB   Recently the genes encoding the human and Escherichia coli GDP-mannose
     dehydratase and GDP-fucose synthetase (GFS) protein have been cloned and
     it has been shown that these two proteins alone are sufficient to convert
     GDP mannose to GDP fucose in vitro.  GDP-fucose synthetase from E. coli
is
     a novel dual function enzyme in that it catalyzes epimerizations and a
     redn. reaction at the same active site.  This aspect separates fucose
     biosynthesis from that of other deoxy and dideoxy sugars in which the
     epimerase and reductase activities are present on sep. enzymes encoded by
     sep. genes.  By NMR spectroscopy we have shown that GFS catalyzes the
     stereospecific hydride transfer of the ProS hydrogen from NADPH to carbon
     4 of the mannose sugar.  This is consistent with the stereospecificity
     obsd. for other members of the short chain dehydrogenase reductase family
     of enzymes of which GFS is a member.  Addnl. the enzyme is able to
     catalyze the epimerization reaction in the absence of NADP or NADPH.  The
     kinetic mechanism of GFS as detd. by product inhibition and fluorescence
     binding studies is consistent with a random mechanism.  The dissocn.
     consts. detd. from fluorescence studies indicate that the enzyme displays
     a 40-fold stronger affinity for the substrate NADPH as compared with the
     product NADP and utilizes NADPH preferentially as compared with NADH.
     This study on GFS, a unique member of the short chain dehydrogenase
     reductase family, coupled with that of its recently published crystal
     structure should aid in the development of antimicrobial or
     anti-inflammatory compds. that act by blocking selectin-mediated cell
     adhesion.
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CC 7-4 (Enzymes)
IT 53-59-8, NADP **15839-70-0**, GDP-fucose 113756-18-6, GDP-fucose synthetase
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BIOL (Biological study); PROC (Process)
(stereochem. course and steady state mechanism of the reaction catalyzed by the GDP-fucose synthetase from Escherichia coli)
IT 58-68-4, NADH 146-91-8, 5'-GDP **18186-48-6**
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(stereochem. course and steady state mechanism of the reaction catalyzed by the GDP-fucose synthetase from Escherichia coli)
REFERENCE COUNT: 35
REFERENCE(S): (1) Andersson, A; Structure 1996, V4, P1161 HCAPLUS
(3) Benson, T; Biochemistry 1993, V32, P2024 HCAPLUS
(4) Breton, R; Structure 1996, V4, P905 HCAPLUS
(5) Chang, S; J Biol Chem 1988, V263, P1693 HCAPLUS
(8) Ghosh, D; Proc Natl Acad Sci U S A 1991, V88, P10064 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 2 OF 7 HCAPLUS COPYRIGHT 2000 ACS,
ACCESSION NUMBER: 1999:468641 HCAPLUS
DOCUMENT NUMBER: 131:99262
TITLE: Enzymatic conversion of GDP-mannose to GDP-fucose using a bifunctional GDP-4-keto-6-deoxymannose 3,5-epimerase/GDP-4-keto-6-galactose reductase protein
from Escherichia coli
INVENTOR(S): Sjoberg, Eric R.
PATENT ASSIGNEE(S): Cytel Corporation, USA
SOURCE: PCT Int. Appl., 79 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9936555	A1	19990722	WO 1999-US893	19990115
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9923217	A1	19990802	AU 1999-23217	19990115
EP 1045916	A1	20001025	EP 1999-903116	19990115
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
PRIORITY APPLN. INFO.:			US 1998-71076	19980115
			WO 1999-US893	19990115

AB This invention provides methods for practical enzymic conversion of

GDP-mannose to GDP-fucose. The invention provides expression vectors that express a prokaryotic enzyme that has both an epimerase and a reductase activity, preferably the YEF B protein of Escherichia coli or the human FX protein. Reaction mixts. are provided for the conversion of GDP-mannose to GDP-fucose using YEF B protein, recycling of NADP/NAD to NADPH/NADH using glucose dehydrogenase and glucose, transfer of fucose from GDP-fucose to an acceptor saccharide using various fucosyltransferases, regeneration of GTP from GDP-fucose using pyruvate kinase and phosphoenolpyruvate, and generating GDP-mannose from mannose using a hexokinase/phosphomannomutase/GDP-mannose pyrophosphorylase system. These methods are useful for efficient synthesis of reactants used in the synthesis of fucosylated oligosaccharides. The sialyl-Lewis X antigen can thus be synthesized at a 100-g scale.

IC ICM C12N015-70
ICS C12N015-61; C12N015-53; C12P019-32; C12P019-18; C12N009-02; C12N009-90

CC 7-3 (Enzymes)
Section cross-reference(s): 3, 9

IT **15839-70-0**, GDP-fucose **18186-48-6**, GDP-4-keto-6-deoxy-D-mannose
RL: BPR (Biological process); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); PROC (Process)
(enzymic conversion of GDP-mannose to GDP-fucose using a bifunctional GDP-4-keto-5-deoxymannose 3,5-epimerase/GDP-4-keto-6-galactose reductase protein from Escherichia coli)

REFERENCE COUNT: 4
REFERENCE(S):
(1) Andrianopoulos, K; JOURNAL OF BACTERIOLOGY 1998, V180(4), P998 HCAPLUS
(2) Stevenson, G; JOURNAL OF BACTERIOLOGY 1996, V178(16), P4885 HCAPLUS
(3) Sullivan, F; JOURNAL OF BIOLOGICAL CHEMISTRY 1998, V273(14), P8193 HCAPLUS
(4) Tonetti, M; JOURNAL OF BIOLOGICAL CHEMISTRY 1996, V271(44), P27274 HCAPLUS

L9 ANSWER 3 OF 7 HCAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:139970 HCAPLUS
DOCUMENT NUMBER: 130:195841
TITLE: Method for enzymically producing guanosine diphosphate-6-deoxyhexoses and the use thereof for producing oligosaccharides
INVENTOR(S): Piepersberg, Wolfgang; Distler, Jurgen; Albermann, Christoph
PATENT ASSIGNEE(S): Roche Diagnostics G.m.b.H., Germany
SOURCE: PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

WO 9909180	A2	19990225	WO 1998-EP5242	19980818
WO 9909180	A3	19990415		
W: DE, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
DE 19735994	A1	19990225	DE 1997-19735994	19970819
EP 1005554	A2	20000607	EP 1998-943894	19980818
R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, NL, SE				
PRIORITY APPLN. INFO.:			DE 1997-19735994	19970819
			WO 1998-EP5242	19980818

AB The invention relates to a method for enzymically prepg. GDP-6-deoxyhexoses from GDP-D-mannose, mannose-1-phosphate or mannose-6-phosphate in the presence of suitable enzymes, such as a GDP-D-mannose-4,6-dehydratase and optionally a GDP-L-fucose synthase or a GDP-4-keto-6-deoxy-D-mannose-4-reductase. The invention also relates to a method for coupling the resulting GDP-activated hexoses with oligo- or polysaccharides using glycosyl transferases, e.g., fucosyl transferase.

IC ICM C12N015-52
ICS C12P019-32; C12P019-18

CC 16-2 (Fermentation and Bioindustrial Chemistry)

IT 3123-67-9P, GDP-D-mannose **15839-70-0P**, GDP-L-fucose 172698-73-6P
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(method for enzymically producing guanosine diphosphate-6-deoxyhexoses and use thereof for producing oligosaccharides)

IT **18186-48-6P**, GDP-4-keto-6-deoxy-D-mannose
RL: BPN (Biosynthetic preparation); BPR (Biological process); BIOL (Biological study); PREP (Preparation); PROC (Process)
(method for enzymically producing guanosine diphosphate-6-deoxyhexoses and use thereof for producing oligosaccharides)

L9 ANSWER 4 OF 7 HCAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER:	1998:367922 HCAPLUS
DOCUMENT NUMBER:	129:119536
TITLE:	Molecular cloning and expression of GDP-D-mannose-4,6-dehydratase, a key enzyme for fucose metabolism defective in Lec13 cells
AUTHOR(S):	Ohyama, Chikara; Smith, Peter L.; Angata, Kiyohiko; Fukuda, Michiko N.; Lowe, John B.; Fukuda, Minoru
CORPORATE SOURCE:	La Jolla Cancer Research Center, Glycobiology Program, The Burnham Institute, La Jolla, CA, 92037, USA
SOURCE:	J. Biol. Chem. (1998), 273(23), 14582-14587 CODEN: JBCHA3; ISSN: 0021-9258
PUBLISHER:	American Society for Biochemistry and Molecular Biology
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB Subsets of mammalian cell surface oligosaccharides contain specific fucosylated moieties expressed in lineage- and/or temporal-specific patterns. The functional significance of these fucosylated structures is incompletely defined, although there is evidence that subsets of them, represented by the sialyl Lex determinant, are important participants in